

REMARKS

Applicants submit this paper in response to the Office Communication dated September 7, 2001 that was issued in the above-identified application. Applicants also enclose herewith a Substitute Sequence Listing. Applicants request a five month extension of time and enclose the fee required pursuant to 37 C.F.R. §1.17(a)(5).

Claims 39-86 are pending.

Rewritten paragraphs appear in the preceding "IN THE SPECIFICATION" section. Attached hereto is a marked-up version of the changes made to the specification paragraphs by the instant amendment. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE" and is included pursuant to 37 C.F.R. §1.121(c)(ii). Should any discrepancies be discovered, the version presented in the preceding "IN THE SPECIFICATION" section shall take precedence.

Applicants submit herewith a Substitute Sequence Listing in paper and computer readable form. I hereby state that the content of the paper and computer readable copies of the Substitute Sequence Listing submitted in accordance with 37 C.F.R. §1.821(c) and (e), are the same. I hereby state that the content of the paper and computer readable copies of the Substitute Sequence Listing, submitted in accordance with 37 C.F.R. §1.821(g), herein does not include new matter.

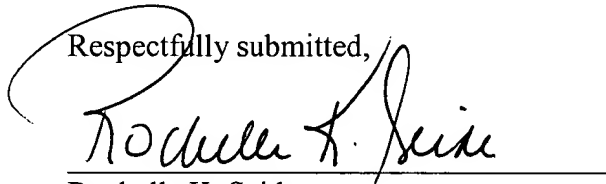
Applicants Substitute Sequence Listing corrects typographical errors in the sequences presented in the original application. Applicants enclose herewith five sequence alignments for the Examiner's review wherein corrections are highlighted. In each case, the

Examiner's attention is respectfully invited to the aligned sequences which provide support for the changes.

The Commissioner is hereby authorized to charge any fees due with this submission not otherwise enclosed to Deposit Account No. 02-4377. Please credit any overpayment of fees associated with this filing to the above-identified deposit account. A duplicate of this page is enclosed.

A copy of the Notice to Comply is enclosed.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Rochelle K. Seide", is written over a horizontal line.

Rochelle K. Seide  
PTO Reg. No. 32,300  
Attorney for Applicant

BAKER BOTTS, L.L.P.  
30 Rockefeller Plaza  
New York, NY 10112  
(212) 408-2626

Enclosures



**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE SPECIFICATION**

This marked-up version was prepared with DeltaView (v2.5.163) software. In this section, added text is marked with double underlining. e.g. added text, and deleted text is marked by a single strikethrough, e.g. ~~deleted text~~.

The paragraph beginning at page 12, line 7 and ending at page 12, line 14 has been **amended** as follows:

Kozaki et al. (*in* "Antibodies against Botulism Neurotoxin", L.L. Simpson, ed., 1989, Academic Press, New York;) suggested that a protective epitope might be present in the 50 kDa carboxyl terminus (HC) region of the protein. Thompson et al. (1990, *Eur. J. Biochem.* **189**:73-81) deduced the amino acid sequence for the serotype A botulinum toxin. DasGupta; et al. (1990, *Biochemie*, **72**:661-664); identified the "nick" site for post-translational cleavage of the expressed toxin polypeptide, from which the sequence of the heavy chain can be deduced as follows (~~see~~ SEQ ID NO:41. See also Krieglstein, et al., 1994, *J. Protein Chem.*, **13**:49-57); 57.

The sequence paragraph beginning at page 12, line 15 and ending at page 12, line 31 has been **deleted**.

ALNDLCIKVNNWDLFFSPSEDNFTNDLNKGEEITSDTNIEAAEENISLDLIQQYYL  
TFNFDNEPENISIEENLSSDIIGQLELMPNIEFPNGKKYELDKYTMFHLYLRAQEFHKGSR  
IALTNSVNEALLNPSRVYTFSSDYVKKVKNKATEAAMFLGWVEQLVYDFTDETSEVSTT  
DKIADITHIPYIGPALNIGMLYKDDFVGALIFSGAVILLEFIPEIAIPVLGTFALVSYIANKV  
LTVQTIDNALSKRNEKWDEVYKYIVTNWLAKVNTQIDLRKKMKEALENQAEATKAH  
NYQYNQYTEEEKNNINFNIDDLSSKLNESINKAMININKFLNQCSVSYLMNSMIPYGVK  
RLEDFDASLKDALLKYIRDNYGTLIGQVDRLKDKVNNTLSTDIPFQLSKYVDNQRLST  
FTEYIKNIINTSILNLRYESNHLIDLSRYASKINIGSKVNFDPIDKNQIQLFNLESSKIEVILK  
NAIVYNSMYENFSTSFWRIPKYFNSISLNNEYTHNCMENNSGWKVSLNYGEIHWTLQDT  
QEIQRVVFVKYSQMINISDYINRWIFVTITNNRLNNSKIYTINGRLIDQKPISNLGNIHASN  
NIMFKLDGCRDTHRYIWIKYFNLFDKELNEKEIKDLYDNQSNSGILKDFWGDYLYQYDKP  
YYMILLYDPNKYVDVNNVGIRGYMYLKGPGRGSVMTTNIYLNSSLYRGTKFIIKKASGN  
KDNIVRNNDRVYINVVVKNKEYRLATNASQAGVEKILSALEIPDVGNLSQVVVMKSKN  
DQGITNKCKMNLQDNNGNDIGFIGFHQFNNI AKLVASNWYNROTERTSSRTLGCSEWEIF  
VDDGWGERPL

The paragraph beginning at page 13, line 1 and ending at page 13, line 6 has been  
**amended** as follows:

Whelan et al. (*Appl. Environ. Microbiol.* **58**:2345-2354, 1992) have deduced the  
amino acid sequence for the serotype B botulinum toxin. Schmidt, et al. (1985, *Arch. Biochem.*  
*Biophys.*, **238**:544-548); provided N-terminal sequence information for the heavy chain resulting

~~form~~from post-translational cleavage of the expressed toxin polypeptide, and the sequence of the heavy chain can be deduced from this information as ~~follows~~SEQ ID NO:42.

The sequence paragraph beginning at page 13, line 8 and ending at page 13, line 24 has been deleted.

APGICIDVDNEDLFFIADKNSFSDDLKNERIEYNTQSNIENDFPINELILD TD LIS  
KIELPSENTESLTDFNVDVPVYEKQPAIKKIFTDENTIFQYLYSQTFPLDIRDISLTSSFDDA  
LLFSNKVYSFFSMDYIKTANKVVEAGLFAGWVKQIVNDFVIEANKSNTMDKIADISLVP  
YIGLALNVGNETAKGNFENAFELAGASILLEFIPELLIPVVGAFLLLESYIDNKNKHKIDN  
ALTKRNEKWSDMYGLIVAQWLSTVNTQFYTIKEGMYKALNYQAQALEEIKYRYNIYS  
EKEKSNINIDFNDINSKLNEGINQAIDNINNFINGCSVSYLMKKMIPLAVEKLLDFDNTLK  
KNLLNYIDENKLYLIGSAEYEKSKVNKYLKTIMPFDL SIY TNDTILIE MFNKYNSEILNNH  
LNLRYKDNNLIDLSGYGAKVEVYDGVELNDKNQFKLTSSANSKIRTTQNQNIIFNSVFL  
DFSVSFWIRIPKYKNDGIONYIHNEYTHNCMKNNSGWKISIRGRIIWTLDINGKTKSVFF  
EYNIREDISEYINRWFFVTITNNLNNAKIYINGKLESNTDIKDIREVIANGEIIFKLDGDIDR  
TQFIWMKYFSIFNTELSQSNIERYKIQSYSEY LKDFWGNPLMYNKEYYMFNAGNKNSY  
TIK LKKDSPVGEILTRSKYNQNSKYINYRDLYIGEKFIIRKSNSSQSINDDIVRKEDYIYLD  
FFNLNQEWRVYTYKYFKKEEELFLAPISDSDEFYNTIQIKEYDEQPTYSCQLLFKKDEES  
TDEIGLIGHRFYESGIVFEEVKDVFCSDWYLEVKRKPYNLKLG CNWQFIPKDEGWTE

The paragraph beginning at page 36, line 17 and ending at page 36, line 17 has been **amended** as follows:

The sequence of the C ~~fragment~~fragement of the A chain was deduced as SEQ ID NO:38.

The sequence paragraph beginning at page 36, line 18 and ending at page 36, line 26 has been **deleted**.

~~RYESNHLIDLSRYASKINIGSKVNFDPIDKNQIQLFNLESSKIEVILKNAIVYNSMY  
ENFSTSFWIRIPKYFNSISLNNEYTHINCMENNSGWKVSLNYGEIHWTLQDTQEIKQRVVF  
KYSQMINISDYINRWIFVTITNNRLNNSKIYINGRLIDQKPISNLGNIHASNNIMFKLDGCR  
DTHRYIWIWIFYNLFDKELNEKEIKDLYDNQSN SGILKDFWGDYLQYDKPYYMLNLYDP  
NKYVDVNNVGI RGYMYLK GPRGSVMTTNIYLNSSLYRGTKFIHKKYASGNKDNIVRNN  
DRVYINVVVKNKEYRLATNASQAGVEKILSALEIPDVGNLSQVVVMKSKNDQGITNKC  
KMNLDNNGNDIGFIGFHQFN NIAKLVASNWYNRQIERSSRTLGCSEWEIFVDDGWGE  
RPL~~

The paragraph beginning at page 36, line 32 and ending at page 36, line 32 has been **amended** as follows:

The sequence for the synthetic gene is ~~found below:~~SEQ ID NO:37.

The sequence paragraph beginning at page 37, line 1 and ending at page 37, line 27 has been **deleted**.

CTCGAGCCATGGCTCGTCTGCTGTCTACCTTCACTGAATACATCAAGAACATC  
ATCAATACCTCCATCCTGAACCTGCGCTACGAATCCAATCACCTGATCGACCTGTCT  
CGCTACGCTTCCAAAATCAACATCGGTTCTAAACTTAACTTCGATCCGATCGACAAG  
AATCAGATCCAGCTGTTCAATCTGGAATCTTCCAAAATCGAAGTTATCCTGAAGAAT  
GCTATCGTATACAACCTCTATGTACGAAAACCTTCTCCACCTCCTTCTGGATCCGTATCC  
CAAATACTTCAACTCCATCTCTCTGAACAATGAATACACCATCATCAACTGCATGGA  
AAACAATTCTGGTTGGAAAGTATCTCTGAACTACGGTGAAATCATCTGGACTCTGCA  
GGACACTCAGGAAATCAAACAGCGTGTGTATTCAAATACTCTCAGATGATCAACA  
TCTCTGACTACATCAATCGCTGGATCTTCGTTACCATCACCAACAATCGTCTGAATA  
ACTCCAAAATCTACATCAACGCCGTCTGATCGACCAGAAACCGATCTCCAATCTGG  
GTAACATCCACGTTCTAATAACATCATGTTCAAACCTGGACGGTTGTCTGTGACACTCA  
CCGCTACATCTGGATCAAATACTTCAATCTGTTTCGACAAAGAACTGAACGAAAAAG  
AAATCAAAGACCTGTACGACAACCAGTCCAATTCTGGTATCCTGAAAGACTTCTGG  
GGTGACTACCTGCAGTACGACAAACCGTACTACATGCTGAATCTGTACGATCCGAA  
CAAATACGTTGACGTCAACAATGTAGGTATCCGCGGTTACATGTACCTGAAAGGTC  
CGCGTGGTTCTGTTATGACTACCAACATCTACCTGAACTCTTCCCTGTACCGTGGTA  
CCAAATTCATCATCAAGAAATACGCGTCTGGTAACAAGGACAATATDCGCAACAAT  
GATCGTGTATACATCAATGTTGTAGTTAAGAACAAAGAATACCGTCTGGCTACCAAT  
GCTTCTCAGGCTGGTGTAGAAAAGATCTTGTCTGCTCTGGAAATCCCGGACGTTGGT  
AATCTGTCTCAGGTAGTTGTAATGAAATCCAAGAACGACCAGGGTATCACTAACAA

ATGCAAAATGAATCTGCAGGACAACAATGGTAACGATATCGGTTTCATCGGTTTCC  
ACCAGTTCAACAATATCGCTAAACTGGTTGCTTCCAACCTGGTACAATCGTCAGATCG  
AACGTTCTCTCTCGCACTCTGGGTTGCTCTTGGGAGTTCATCCCGGTTGATGACGGTT  
GGGGTGAACGTCCGCTGTAACCCGGGAAAGCTT

The paragraph beginning at page 38, line 6 and ending at page 38, line 7 has been **amended** as follows:

The C fragment for botulism toxin serotype B of Whelan was studied and the portion of the protein having the sequence of SEQ ID NO:40 was defined as the C fragment.

The sequence paragraph beginning at page 38, line 8 and ending at page 38, line 16 has been **deleted**.

FNKYNSEILNNIILNRLRYKDNNLIDLSGYGAKVEVYDGVELNDKNQFKLTSSANS  
KIRVTQNQNIIFNSVFLDFSVSFWIRIPKYKNDGIQNYIHNEYTIINCMKNNSGWKISIRGN  
RITWTLIDINGKTKSVFFEYNIREDISEYINRWFFVTITNNLNNAKIYINGKLESNTDIKDIR  
EVIANGEIIFKLDGDIDRTQFIWMKYFSIFNTELSQSNIEERYKIQSYSEYLKDFWGNPLM  
YNKEYYMFNAGNKNSYIKLKKDSPVGEILTRSKYNQNSKYINYRDLYIGEKFHIRRKSNS  
QSINDDIVRKEDIYIYLDFF-  
NLNQEQRVYTYKKFKKEEEKLFLAPISDSDEFYNTIQIKEYDEQPTY



SCQLLFKKDEESTDEIGLIGHRFYESGIVFEEYKDYFCISKWYLKEVKRKPYNLKLGCN  
WQFIPKDEGWTE

The paragraph beginning at page 38, line 17 and ending at page 38, line 17 has been **deleted**.

~~was defined as the C fragment.~~

The paragraph beginning at page 38, line 18 and ending at page 38, line 25 has been **amended** as follows:

The synthetic gene for expression in *E. coli* was produced in the manner described for synthesis of the gene for the C fragment of the A strand, namely, using a large number of oligomers of approximately 60-65 bases corresponding to the sequences of the  $_{-}^{+}$  and  $_{-}$  strands with overlaps of 7 bases. The oligomers were allowed to anneal and were ligated to form subunits of 250-300 base pairs each. Each subunit had been designed to have restriction sites at their termini which allowed them to be assembled in the right order to form the complete gene. ~~the~~The synthetic gene for encoding the eC fragment of the B toxin ~~was as follows~~is SEQ ID NO:39.

The sequence paragraph beginning at page 38, line 26 and ending at page 39, line 21 has been **deleted**.

ATGGCTTTCAACAAATACAATTCCGAAATCCTGAACAATATCATCCTGAACC  
TGCGTTACAAAGACAACAATCTGATCGATCTGTCTGGTTACGGTGCTAAAGTTGAAG  
TATACGACGGTGTGAACTGAATGACAAGAACCAGTTCAAACCTGACCTCTTCCGCTA  
ACTCTAAGATCCGTGTTACTCAGAATCAGAACATCATCTTCAAACCTCCGTATTCCTGG  
ACTTCTCTGTTTCCTTCTGGATCCGTATCCCGAAATACAAGAACGACGGTATCCAGA  
ATTACATCCACAATGAATACACCATCATCAACTGCATGAAGAATAAATCTCTGGTTGG  
AAGATCTCCATCCGCGGTAACCGTATCATCTGGACTCTGATCGATATCAACGGTAAG  
ACCAAATCTGTATTCTTCGAATACAACATCCGTGAAGACATCTCTGAATACATCAAT  
CGCTGGTTCTTCGTTACCATCACCAATAACCTGAACAATGCTAAAATCTACATCAAC  
GGTAAACTGGAATCTAATACCGACATCAAAGACATCCGTGAAGTTATCGCTAACGG  
TGAAATCATCTTCAAACCTGGACGGTGACATCGATCGTACCCAGTTCATCTGGATGAA  
ATACTTCTCCATCTTCAACACCGAACTGTCTCAGTCCAATATCGAAGAACGGTACAA  
GATCCAGTCTTACTCCGAATACCTGAAAGACTTCTGGGGTAATCCGCTGATGTACAA  
CAAAGAATACTATATGTTCAATGCTGGTAACAAGAATCTTACATCAAACCTGAAGA  
AAGACTCTCCGGTTGGTGAATCCTGACTCGTTCCAAATACAACCAGAACTCTAAATA  
CATCAACTACCGCGACCTGTACATCGGTGAAAAGTTCATCATCCGTCGCAAATCTAA  
CTCTCAGTCCATCAATGAGACATCGTACGTAAAGAAGACTACATCTACCTGGACTTC  
TTCAACCTGAATCAGAATGGCGTGTATACACCTACAAGTACTTCAAGAAAGAAGAA  
GAAAAGCTTTTCCTGGCTCCGATCTCTGATTCCGACGAACTCTACAACACCATCCAG  
ATCAAAGAATACGACGAACAGCCGACCTACTCTTGCCAGCTGCTGTTCAAGAAAGA

TGAAGAATCTACTGACGAAATCGGTCTGATCGGTATCCACCGTTTCTACGAATCTGG  
TATCGTATTCGAAGAATACAAAGACTCTTCTGCATCTCCAAATGGTACCTGAAGGAA  
GTTAAACGCAAACCGTACAACCTGAAACTGGGGTTGCAATTGGCAGTTCATCCCGAA  
AGACGAAGGTTGGACCGAATAGTAACCTCTAGAGTCGAGGCCTGCAG

### IN THE SEQUENCE LISTING

The following alignments show the changes made to the indicated sequences and the support for these changes based on other sequences in the application. In this section, a summary of changes appears just before each alignment and changes are highlighted in the alignments. (SI# = SEQ ID NO; Ac# M81186 = Genbank accession number M81186, a copy of which is attached.)

### Alignment 1

SEQ ID NO:41 (appearing on page 12 in the specification as filed) has been amended as follows:

- At position 717 of paragraph 1.8, Y has been inserted.
- At position 822 of paragraph 1.10,  $O \rightarrow Q$ .

[illegible]

Paragraph 1.2

91 105 106 120 121 135 136 150 151 165 166 180  
As filed NGKKYELDKYTMFHY LRAQEFHKGKSRIAL TNSVNEALNPSRVY TPFSSDYVKKVKNKAT EAAMFLGWVEQLVYD FTDETSEVSTTDKIA 180  
Amended NGKKYELDKYTMFHY LRAQEFHKGKSRIAL TNSVNEALNPSRVY TPFSSDYVKKVKNKAT EAAMFLGWVEQLVYD FTDETSEVSTTDKIA 180  
P.36 SI#38 ----- 0  
Fig.3 SI#6 ----- 0  
Fig.2 SI#4 ----- 0  
Fig.1 SI#2 ----- 0

Paragraph 1.3

181 195 196 210 211 225 226 240 241 255 256 270  
As filed DITIIIPYIGPALNI GMLYKDDFVGALIFS GAVILLEFIPEIAIP VLGTFFALVSYIANKV LTVQOTIDNALSQRNE KWDEVYKYIVTNWLA 270  
Amended DITIIIPYIGPALNI GMLYKDDFVGALIFS GAVILLEFIPEIAIP VLGTFFALVSYIANKV LTVQOTIDNALSQRNE KWDEVYKYIVTNWLA 270  
P.36 SI#38 ----- 0  
Fig.3 SI#6 ----- 0  
Fig.2 SI#4 ----- 0  
Fig.1 SI#2 ----- 0

Paragraph 1.4

271 285 286 300 301 315 316 330 331 345 346 360  
As filed KVNTQIDLIRKKMKE ALENQAEATKAIINY QYNQYTEEEKNNINF NIDDLSSKLNESINK AMININKFLNQC SVS YLMNSMIPYGVKRLE 360  
Amended KVNTQIDLIRKKMKE ALENQAEATKAIINY QYNQYTEEEKNNINF NIDDLSSKLNESINK AMININKFLNQC SVS YLMNSMIPYGVKRLE 360  
P.36 SI#38 ----- 0  
Fig.3 SI#6 ----- 0  
Fig.2 SI#4 ----- 0  
Fig.1 SI#2 ----- 0

Paragraph 1.5

361 375 376 390 391 405 406 420 421 435 436 450  
As filed DFDASLKDALLKYIR DNYGTLIGQVDRDKD KVNNTLSTDIPFQLS KYVDNQRLSTFTEY IKNIINTSILNRYE SNHLIDLRYASKIN 450  
Amended DFDASLKDALLKYIR DNYGTLIGQVDRDKD KVNNTLSTDIPFQLS KYVDNQRLSTFTEY IKNIINTSILNRYE SNHLIDLRYASKIN 450  
P.36 SI#38 ----- 18  
Fig.3 SI#6 ----- 38  
Fig.2 SI#4 ----- 37  
Fig.1 SI#2 ----- 40

Paragraph 1.6

451 465 466 480 481 495 496 510 511 525 526 540  
As filed IGSKVNFDPIDKNQI QLFNLESSKIEVILK NAIIVNSMYENFSTS FWIRIPKYFNSISLN NEYTIINCWENNSGW KVSILNYGEIITWLQD 540  
Amended IGSKVNFDPIDKNQI QLFNLESSKIEVILK NAIIVNSMYENFSTS FWIRIPKYFNSISLN NEYTIINCWENNSGW KVSILNYGEIITWLQD 540  
P.36 SI#38 IGSKVNFDPIDKNQI QLFNLESSKIEVILK NAIIVNSMYENFSTS FWIRIPKYFNSISLN NEYTIINCWENNSGW KVSILNYGEIITWLQD 108  
Fig.3 SI#6 IGSKVNFDPIDKNQI QLFNLESSKIEVILK NAIIVNSMYENFSTS FWIRIPKYFNSISLN NEYTIINCWENNSGW KVSILNYGEIITWLQD 128  
Fig.2 SI#4 IGSKVNFDPIDKNQI QLFNLESSKIEVILK NAIIVNSMYENFSTS FWIRIPKYFNSISLN NEYTIINCWENNSGW KVSILNYGEIITWLQD 127  
Fig.1 SI#2 IGSKVNFDPIDKNQI QLFNLESSKIEVILK NAIIVNSMYENFSTS FWIRIPKYFNSISLN NEYTIINCWENNSGW KVSILNYGEIITWLQD 130

Paragraph 1.7

541 555 556 570 571 585 586 600 601 615 616 630  
As filed TQEIQRVVPKYSQM INISDYINRWIFVTI TNNRLNNSKIYTING RLIDQKPIISNLGNIH ASNNIMFKLDGCRDT HRYIWIKYFNLFDEKE 630  
Amended TQEIQRVVPKYSQM INISDYINRWIFVTI TNNRLNNSKIYTING RLIDQKPIISNLGNIH ASNNIMFKLDGCRDT HRYIWIKYFNLFDEKE 630  
P.36 SI#38 TQEIQRVVPKYSQM INISDYINRWIFVTI TNNRLNNSKIYIN-G RLIDQKPIISNLGNIH ASNNIMFKLDGCRDT HRYIWIKYFNLFDEKE 197  
Fig.3 SI#6 TQEIQRVVPKYSQM INISDYINRWIFVTI TNNRLNNSKIYIN-G RLIDQKPIISNLGNIH ASNNIMFKLDGCRDT HRYIWIKYFNLFDEKE 217  
Fig.2 SI#4 TQEIQRVVPKYSQM INISDYINRWIFVTI TNNRLNNSKIYIN-G RLIDQKPIISNLGNIH ASNNIMFKLDGCRDT HRYIWIKYFNLFDEKE 216  
Fig.1 SI#2 TQEIQRVVPKYSQM INISDYINRWIFVTI TNNRLNNSKIYIN-G RLIDQKPIISNLGNIH ASNNIMFKLDGCRDT HRYIWIKYFNLFDEKE 219

Paragraph 1.8

631 645 646 660 661 675 676 690 691 705 706 720  
As filed LNEKEIKDLYDNQSN SGILKDFWGDYLYQD KPYVMILLYDPNKYV DVNNVGIRGYMYLKG PRGSVMTTNIYLNSS LYRGTKFIIKKYASG 719  
Amended LNEKEIKDLYDNQSN SGILKDFWGDYLYQD KPYVMILLYDPNKYV DVNNVGIRGYMYLKG PRGSVMTTNIYLNSS LYRGTKFIIKKYASG 719  
P.36 SI#38 LNEKEIKDLYDNQSN SGILKDFWGDYLYQD KPYVMILLYDPNKYV DVNNVGIRGYMYLKG PRGSVMTTNIYLNSS LYRGTKFIIKKYASG 287  
Fig.3 SI#6 LNEKEIKDLYDNQSN SGILKDFWGDYLYQD KPYVMILLYDPNKYV DVNNVGIRGYMYLKG PRGSVMTTNIYLNSS LYRGTKFIIKKYASG 307  
Fig.2 SI#4 LNEKEIKDLYDNQSN SGILKDFWGDYLYQD KPYVMILLYDPNKYV DVNNVGIRGYMYLKG PRGSVMTTNIYLNSS LYRGTKFIIKKYASG 306  
Fig.1 SI#2 LNEKEIKDLYDNQSN SGILKDFWGDYLYQD KPYVMILLYDPNKYV DVNNVGIRGYMYLKG PRGSVMTTNIYLNSS LYRGTKFIIKKYASG 309

Paragraph 1.9

721 735 736 750 751 765 766 780 781 795 796 810  
As filed NKDNIVRNDRVYIN VVVKNKEYRLATNAS QAGVEKILSALEIPD VGNLSQVVVVMKSKND QGITNKCCKMNLQDNN GNDIGFIGFHQFNFI 809  
Amended NKDNIVRNDRVYIN VVVKNKEYRLATNAS QAGVEKILSALEIPD VGNLSQVVVVMKSKND QGITNKCCKMNLQDNN GNDIGFIGFHQFNFI 809  
P.36 SI#38 NKDNIVRNDRVYIN VVVKNKEYRLATNAS QAGVEKILSALEIPD VGNLSQVVVVMKSKND QGITNKCCKMNLQDNN GNDIGFIGFHQFNFI 377  
Fig.3 SI#6 NKDNIVRNDRVYIN VVVKNKEYRLATNAS QAGVEKILSALEIPD VGNLSQVVVVMKSKND QGITNKCCKMNLQDNN GNDIGFIGFHQFNFI 397  
Fig.2 SI#4 NKDNIVRNDRVYIN VVVKNKEYRLATNAS QAGVEKILSALEIPD VGNLSQVVVVMKSKND QGITNKCCKMNLQDNN GNDIGFIGFHQFNFI 396  
Fig.1 SI#2 NKDNIVRNDRVYIN VVVKNKEYRLATNAS QAGVEKILSALEIPD VGNLSQVVVVMKSKND QGITNKCCKMNLQDNN GNDIGFIGFHQFNFI 399

Paragraph 1.10	811	825	826	840	841	855	856	870	871	885	886	900
As filed	AKLVASNWNRYRQTER	SSRTLGCSEWEIFPVD	DGWERPL			846						
Amended	AKLVASNWNRYRQTER	SSRTLGCSEWEIFPVD	DGWERPL			847						
P.36 SI#38	AKLVASNWNRYRQIER	SSRTLGCSEWEIFPVD	DGWERPL			415						
Fig.3 SI#6	AKLVASNWNRYRQIER	SSRTLGCSEWEIFPVD	DGWERPL			435						
Fig.2 SI#4	AKLVASNWNRYRQIER	SSRTLGCSEWEIFPVD	DGWERPL			434						
Fig.1 SI#2	AKLVASNWNRYRQIER	SSRTLGCSEWEIFPVD	DGWERPL			437						

## Alignment 2

SEQ ID NO:42 (appearing on page 13 in the specification as filed) has been amended as follows:

- At position 911 of paragraph 2.11, T→V.
- At position 969 of paragraph 2.11, N has been inserted.
- At position 1110 of paragraph 2.13, T has been deleted.
- At position 1193 of paragraph 2.14, K has been inserted.
- At position 1254 of paragraph 2.14, V→Y.
- At position 1257 of paragraph 2.14, V→Y.
- At position 1262 of paragraph 2.15, D→K.
- At position 1269 of paragraph 2.15, K has been inserted.

Paragraph 2.1

NY02:373755.1

1 15 16 30 31 45 46 60 61 75 76 90  
As filed -----  
Amended -----  
Fig 4 SI#8 -----  
Ac# M81186 MPVTINNFNYNDPID NNNIIMMEPPFARGT GRYKAFKITDRIWI IPERYTFGYKPEDFN KSSGIFNRDVCEYYD PDYLNTNDKKNIFLQ 90

Paragraph 2.2  
91 105 106 120 121 135 136 150 151 165 166 180  
As filed -----  
Amended -----  
Fig 4 SI#8 -----  
Ac# M81186 TMIKLFNRIKSKPLG EKLEMIINGIPYLG DRRVPLEEFNTNIAS VTVNKLISNPGEVER KKGIFANLIIFGPGP VLNETIDIGIQNH 180

Paragraph 2.3  
181 195 196 210 211 225 226 240 241 255 256 270  
As filed -----  
Amended -----  
Fig 4 SI#8 -----  
Ac# M81186 PASREGFGGIMQMKF CPEYVSVFNNVQENK GASIFNRRGYFSDPA LILMHELIHVLHGLY GIKVDDPLIVPNEKK FFMQSTDIAIQAEELY 270

Paragraph 2.4  
271 285 286 300 301 315 316 330 331 345 346 360  
As filed -----  
Amended -----  
Fig 4 SI#8 -----  
Ac# M81186 TFGGQDPSIITPSTD KSIYDKVLQNFGRGIV DRLNKVLVCISDPNI NINIYKNKFCKYKF VEDSEKYSIDVESF DKLYKSLMFGFTETN 360

Paragraph 2.5  
361 375 376 390 391 405 406 420 421 435 436 450  
As filed -----  
Amended -----  
Fig 4 SI#8 -----  
Ac# M81186 IAENYKIKTRASYFS DSLPPVKIKNLLDNE IYTIEEGFNISDKDM EKEYRGONKAINKQA YEEISKEHLAVYKIQ MCKSVKAPGICIDVD 450



Paragraph 2.6														
451	465	466	480	481	495	496	510	511	525	526		540		
As filed	NEDLFFIADKNSFSD	DLKNERIEYNTQSN	YIENDFPINELILD	DLISKIELPSENTES	LTDFNVDVPVYEKQP	AIKKIFTDENTIFQY						99		
Amended	NEDLFFIADKNSFSD	DLKNERIEYNTQSN	YIENDFPINELILD	DLISKIELPSENTES	LTDFNVDVPVYEKQP	AIKKIFTDENTIFQY						99		
Fig 4 SI#8	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	0		
Ac# M81186	NEDLFFIADKNSFSD	DLKNERIEYNTQSN	YIENDFPINELILD	DLISKIELPSENTES	LTDFNVDVPVYEKQP	AIKKIFTDENTIFQY						540		
Paragraph 2.7														
541	555	556	570	571	585	586	600	601	615	616		630		
As filed	LYSQTFPLDIRDISL	TSSFDDALLFSNKVY	SFFSMDYIKTANKV	EAGLFAGWVKQIVND	FVIEANKSNTMDKIA	DISLIVPYIGLALNV						189		
Amended	LYSQTFPLDIRDISL	TSSFDDALLFSNKVY	SFFSMDYIKTANKV	EAGLFAGWVKQIVND	FVIEANKSNTMDKIA	DISLIVPYIGLALNV						189		
Fig 4 SI#8	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	0		
Ac# M81186	LYSQTFPLDIRDISL	TSSFDDALLFSNKVY	SFFSMDYIKTANKV	EAGLFAGWVKQIVND	FVIEANKSNTMDKIA	DISLIVPYIGLALNV						630		
Paragraph 2.8														
631	645	646	660	661	675	676	690	691	705	706		720		
As filed	GNETAKGNFENAFEI	AGASILLEFIPELLI	PVVGAFILLESYIDNK	NKIIKTIDNALTKRN	EKWSDMYGLIVAQWL	STVNTQFYTIKEGMY						279		
Amended	GNETAKGNFENAFEI	AGASILLEFIPELLI	PVVGAFILLESYIDNK	NKIIKTIDNALTKRN	EKWSDMYGLIVAQWL	STVNTQFYTIKEGMY						279		
Fig 4 SI#8	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	0		
Ac# M81186	GNETAKGNFENAFEI	AGASILLEFIPELLI	PVVGAFILLESYIDNK	NKIIKTIDNALTKRN	EKWSDMYGLIVAQWL	STVNTQFYTIKEGMY						720		
Paragraph 2.9														
721	735	736	750	751	765	766	780	781	795	796		810		
As filed	KALNYQAQALEEIIK	YRYNIYSEKEKSNIN	IDFNDINSKLNIGIN	QAIDNINNFINCGSV	SYLMKKMIPLAVEKL	LDFDNTLKKNLLNYI						369		
Amended	KALNYQAQALEEIIK	YRYNIYSEKEKSNIN	IDFNDINSKLNIGIN	QAIDNINNFINCGSV	SYLMKKMIPLAVEKL	LDFDNTLKKNLLNYI						369		
Fig 4 SI#8	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	0		
Ac# M81186	KALNYQAQALEEIIK	YRYNIYSEKEKSNIN	IDFNDINSKLNIGIN	QAIDNINNFINCGSV	SYLMKKMIPLAVEKL	LDFDNTLKKNLLNYI						810		
Paragraph 2.10														
811	825	826	840	841	855	856	870	871	885	886		900		
As filed	DENKLYLIGSAEYK	SKVNKYLKTIMPFDL	SIYTNDTILIEMFNK	YNSEILNIIILNURY	KDNNLIDLSGYGAKV	EYVDGVELNDKNQFK						459		
Amended	DENKLYLIGSAEYK	SKVNKYLKTIMPFDL	SIYTNDTILIEMFNK	YNSEILNIIILNURY	KDNNLIDLSGYGAKV	EYVDGVELNDKNQFK						459		
Fig 4 SI#8	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	49		
Ac# M81186	DENKLYLIGSAEYK	SKVNKYLKTIMPFDL	SIYTNDTILIEMFNK	YNSEILNIIILNURY	KDNNLIDLSGYGAKV	EYVDGVELNDKNQFK						900		

Paragraph 2.11

901 915 916 930 931 945 946 960 961 975 976 990 990  
As filed LTSSANSKIRVTQNO NIIFNSVFLDFSVSF WIRIPKYKNDGIQNY IHNEYTIINCMKNNS GWKISIRGNRIIWTL IDINGKTKSVFFEYN 548  
Amended LTSSANSKIRVTQNO NIIFNSVFLDFSVSF WIRIPKYKNDGIQNY IHNEYTIINCMKNNS GWKISIRGNRIIWTL IDINGKTKSVFFEYN 549  
Fig 4 SI#8 LTSSANSKIRVTQNO NIIFNSVFLDFSVSF WIRIPKYKNDGIQNY IHNEYTIINCMKNNS GWKISIRGNRIIWTL IDINGKTKSVFFEYN 139  
Ac# M81186 LTSSANSKIRVTQNO NIIFNSVFLDFSVSF WIRIPKYKNDGIQNY IHNEYTIINCMKNNS GWKISIRGNRIIWTL IDINGKTKSVFFEYN 990

Paragraph 2.12

991 1005 1006 1020 1021 1035 1036 1050 1051 1065 1066 1080 1080  
As filed IREDISEYNRWFFV TITNNLNNAKIYING KLESNTDIKDIREVI ANGEIIFKLDGDIDR TQFIWMKYPSIFNTE LSQSNIEERYKIQSY 638  
Amended IREDISEYNRWFFV TITNNLNNAKIYING KLESNTDIKDIREVI ANGEIIFKLDGDIDR TQFIWMKYPSIFNTE LSQSNIEERYKIQSY 639  
Fig 4 SI#8 IREDISEYNRWFFV TITNNLNNAKIYING KLESNTDIKDIREVI ANGEIIFKLDGDIDR TQFIWMKYPSIFNTE LSQSNIEERYKIQSY 229  
Ac# M81186 IREDISEYNRWFFV TITNNLNNAKIYING KLESNTDIKDIREVI ANGEIIFKLDGDIDR TQFIWMKYPSIFNTE LSQSNIEERYKIQSY 1080

Paragraph 2.13

1081 1095 1096 1110 1111 1125 1126 1140 1141 1155 1156 1170 1170  
As filed SEYLKDFWGNPLMYN KEYYMFNAGNKNSY IKLKKDSPVGEILTR SKYNQNSKYINYRDL YIGEKFIIRKKSNSQ SINDDIVRKEDYIYL 728  
Amended SEYLKDFWGNPLMYN KEYYMFNAGNKNSY IKLKKDSPVGEILTR SKYNQNSKYINYRDL YIGEKFIIRKKSNSQ SINDDIVRKEDYIYL 728  
Fig 4 SI#8 SEYLKDFWGNPLMYN KEYYMFNAGNKNSY IKLKKDSPVGEILTR SKYNQNSKYINYRDL YIGEKFIIRKKSNSQ SINDDIVRKEDYIYL 318  
Ac# M81186 SEYLKDFWGNPLMYN KEYYMFNAGNKNSY IKLKKDSPVGEILTR SKYNQNSKYINYRDL YIGEKFIIRKKSNSQ SINDDIVRKEDYIYL 1169

Paragraph 2.14

1171 1185 1186 1200 1201 1215 1216 1230 1231 1245 1246 1260 1260  
As filed DFFNLNQEWRYTYK YFKKEEKLFLAPIS DSDEFYNTIQIKEYD EQPTYSCQLLFKKDE ESTDEIGLIGIHRFY ESGIVFEEYKDYFCI 817  
Amended DFFNLNQEWRYTYK YFKKEEKLFLAPIS DSDEFYNTIQIKEYD EQPTYSCQLLFKKDE ESTDEIGLIGIHRFY ESGIVFEEYKDYFCI 818  
Fig 4 SI#8 DFFNLNQEWRYTYK YFKKEEKLFLAPIS DSDEFYNTIQIKEYD EQPTYSCQLLFKKDE ESTDEIGLIGIHRFY ESGIVFEEYKDYFCI 408  
Ac# M81186 DFFNLNQEWRYTYK YFKKEEKLFLAPIS DSDEFYNTIQIKEYD EQPTYSCQLLFKKDE ESTDEIGLIGIHRFY ESGIVFEEYKDYFCI 1259

Paragraph 2.15

1261 1275 1276 1290 1291 1305 1306 1320 1321 1335 1336 1350 1350  
As filed SKWYLKEVVRKPPYNL KLGCNWQFIPKDEGW TE 848  
Amended SKWYLKEVVRKPPYNL KLGCNWQFIPKDEGW TE 850  
Fig 4 SI#8 SKWYLKEVVRKPPYNL KLGCNWQFIPKDEGW TE 440  
Ac# M81186 SKWYLKEVVRKPPYNL KLGCNWQFIPKDEGW TE 1291

### Alignment 3

SEQ ID NO:37 (appearing on page 37 in the specification as filed) has been amended as follows:

- At position 147 of paragraph 3.2,  $C \rightarrow G$ .
- At position 287 of paragraph 3.4, G is inserted.
- At position 535 of paragraph 3.6, G is inserted.
- At position 583 of paragraph 3.7, C is inserted.
- At position 956 of paragraph 3.11,  $D \rightarrow C$ .
- At positions 957-959 of paragraph 3.11, GTT is

Paragraph 3.1

1                   15 16                   30 31                   45 46                   60 61                   75 76                   90

As filed   ---CTCGAGCCATGG   CTCGTCTGCTGTCTA   CCTTCACTGAATACA   TCAAGAACATCATCA   ATACCTCCATCCTGA   ACCTGGGCTACGAAT   87

Amended   ---CTCGAGCCATGG   CTCGTCTGCTGTCTA   CCTTCACTGAATACA   TCAAGAACATCATCA   ATACCTCCATCCTGA   ACCTGGGCTACGAAT   87

Fig.1 SI#1   GAATTCGAACGATG   CGT--CTGCTGTCTA   CCTTCACTGAATACA   TCAAGAACATCATCA   ATACCTCCATCCTGA   ACCTGGGCTACGAAT   88

Fig.3 SI#5   GAATTCGAACGATG   G-----CCTCTA   CCTTCACTGAATACA   TCAAGAACATCATCA   ATACCTCCATCCTGA   ACCTGGGCTACGAAT   82

Fig.2 SI#3   GAATTCGAACGATG   T-----CTA   CCTTCACTGAATACA   TCAAGAACATCATCA   ATACCTCCATCCTGA   ACCTGGGCTACGAAT   79

Paragraph 3.2

91                   105 106                   120 121                   135 136                   150 151                   165 166                   180

As filed   CCAATCACCTGATCG   ACCTGTCTCGTACG   CTTCCAAAATCAACA   TCGGTTCCTAAAGTTA   ACTTCGATCCGATCG   ACAAGAATCAGATCC   177

Amended   CCAATCACCTGATCG   ACCTGTCTCGTACG   CTTCCAAAATCAACA   TCGGTTCCTAAAGTTA   ACTTCGATCCGATCG   ACAAGAATCAGATCC   177

Fig.1 SI#1   CCAATCACCTGATCG   ACCTGTCTCGTACG   CTTCCAAAATCAACA   TCGGTTCCTAAAGTTA   ACTTCGATCCGATCG   ACAAGAATCAGATCC   178

Fig.3 SI#5   CCAATCACCTGATCG   ACCTGTCTCGTACG   CTTCCAAAATCAACA   TCGGTTCCTAAAGTTA   ACTTCGATCCGATCG   ACAAGAATCAGATCC   172

Fig.2 SI#3   CCAATCACCTGATCG   ACCTGTCTCGTACG   CTTCCAAAATCAACA   TCGGTTCCTAAAGTTA   ACTTCGATCCGATCG   ACAAGAATCAGATCC   169

Paragraph 3.3  
181 195 196 210 211 225 226 240 241 255 256 270 267  
As filed AGGTGTTCAATCTGG AATCTTCCAAAATCG AAGTTATCCTGAAGA ATGCTATCGTATACA ACTCTATGTACGAAA ACTTCTCCACCTCCT  
Amended AGGTGTTCAATCTGG AATCTTCCAAAATCG AAGTTATCCTGAAGA ATGCTATCGTATACA ACTCTATGTACGAAA ACTTCTCCACCTCCT  
Fig.1 SI#1 AGGTGTTCAATCTGG AATCTTCCAAAATCG AAGTTATCCTGAAGA ATGCTATCGTATACA ACTCTATGTACGAAA ACTTCTCCACCTCCT  
Fig.3 SI#5 AGGTGTTCAATCTGG AATCTTCCAAAATCG AAGTTATCCTGAAGA ATGCTATCGTATACA ACTCTATGTACGAAA ACTTCTCCACCTCCT  
Fig.2 SI#3 AGGTGTTCAATCTGG AATCTTCCAAAATCG AAGTTATCCTGAAGA ATGCTATCGTATACA ACTCTATGTACGAAA ACTTCTCCACCTCCT

Paragraph 3.4  
271 285 286 300 301 315 316 330 331 345 346 360 356  
As filed TCTGGATCCGTATCC CGAAATFACTTCAACT CCATCTCTCTGAACA ATGAATACACCATCA TCAACTGCATGGAAC ACAATTTCTGGTTGGA  
Amended TCTGGATCCGTATCC CGAAATFACTTCAACT CCATCTCTCTGAACA ATGAATACACCATCA TCAACTGCATGGAAC ACAATTTCTGGTTGGA  
Fig.1 SI#1 TCTGGATCCGTATCC CGAAATFACTTCAACT CCATCTCTCTGAACA ATGAATACACCATCA TCAACTGCATGGAAC ACAATTTCTGGTTGGA  
Fig.3 SI#5 TCTGGATCCGTATCC CGAAATFACTTCAACT CCATCTCTCTGAACA ATGAATACACCATCA TCAACTGCATGGAAC ACAATTTCTGGTTGGA  
Fig.2 SI#3 TCTGGATCCGTATCC CGAAATFACTTCAACT CCATCTCTCTGAACA ATGAATACACCATCA TCAACTGCATGGAAC ACAATTTCTGGTTGGA

Paragraph 3.5  
361 375 376 390 391 405 406 420 421 435 436 450 446  
As filed AAGTATCTCTGAACT ACGGTGAAATCATCT GGACTCTGCAGGACA CTCAGGAAATCAAAC AGCGTGTGTGATTTCA AATACTCTCAGATGA  
Amended AAGTATCTCTGAACT ACGGTGAAATCATCT GGACTCTGCAGGACA CTCAGGAAATCAAAC AGCGTGTGTGATTTCA AATACTCTCAGATGA  
Fig.1 SI#1 AAGTATCTCTGAACT ACGGTGAAATCATCT GGACTCTGCAGGACA CTCAGGAAATCAAAC AGCGTGTGTGATTTCA AATACTCTCAGATGA  
Fig.3 SI#5 AAGTATCTCTGAACT ACGGTGAAATCATCT GGACTCTGCAGGACA CTCAGGAAATCAAAC AGCGTGTGTGATTTCA AATACTCTCAGATGA  
Fig.2 SI#3 AAGTATCTCTGAACT ACGGTGAAATCATCT GGACTCTGCAGGACA CTCAGGAAATCAAAC AGCGTGTGTGATTTCA AATACTCTCAGATGA

Paragraph 3.6  
451 465 466 480 481 495 496 510 511 525 526 540 535  
As filed TCAACATCTCTGAACT ACATCAATCGCTGGA TCTTCGTTTACCATCA CCAACAATCGTCTGA ATAACTCCAAAATCT ACATCAACGTC  
Amended TCAACATCTCTGAACT ACATCAATCGCTGGA TCTTCGTTTACCATCA CCAACAATCGTCTGA ATAACTCCAAAATCT ACATCAACGTC  
Fig.1 SI#1 TCAACATCTCTGAACT ACATCAATCGCTGGA TCTTCGTTTACCATCA CCAACAATCGTCTGA ATAACTCCAAAATCT ACATCAACGTC  
Fig.3 SI#5 TCAACATCTCTGAACT ACATCAATCGCTGGA TCTTCGTTTACCATCA CCAACAATCGTCTGA ATAACTCCAAAATCT ACATCAACGTC  
Fig.2 SI#3 TCAACATCTCTGAACT ACATCAATCGCTGGA TCTTCGTTTACCATCA CCAACAATCGTCTGA ATAACTCCAAAATCT ACATCAACGTC

Paragraph 3.7

541 555 556 570 571 585 586 600 601 615 616 630 624  
As filed TGATCGACCAGAAAC CGATCTCCAATCTGG GTAACATCCACGTTT CTAATAAACATCATGT TCAAACTGGACGGTT GTCTGACACTCACC  
Amended TGATCGACCAGAAAC CGATCTCCAATCTGG GTAACATCCACGTTT CTAATAAACATCATGT TCAAACTGGACGGTT GTCTGACACTCACC 627  
Fig.1 SI#1 TGATCGACCAGAAAC CGATCTCCAATCTGG GTAACATCCACGTTT CTAATAAACATCATGT TCAAACTGGACGGTT GTCTGACACTCACC 628  
Fig.3 SI#5 TGATCGACCAGAAAC CGATCTCCAATCTGG GTAACATCCACGTTT CTAATAAACATCATGT TCAAACTGGACGGTT GTCTGACACTCACC 622  
Fig.2 SI#3 TGATCGACCAGAAAC CGATCTCCAATCTGG GTAACATCCACGTTT CTAATAAACATCATGT TCAAACTGGACGGTT GTCTGACACTCACC 619

Paragraph 3.8

631 645 646 660 661 675 676 690 691 705 706 720 714  
As filed GCTACATCTGGATCA AATACTTCAATCTGT TCGACAAAGAACTGA ACGAAAAAGAAATCA AAGACCTGTACGACA ACCAGTCCAAATCTG  
Amended GCTACATCTGGATCA AATACTTCAATCTGT TCGACAAAGAACTGA ACGAAAAAGAAATCA AAGACCTGTACGACA ACCAGTCCAAATCTG 717  
Fig.1 SI#1 GCTACATCTGGATCA AATACTTCAATCTGT TCGACAAAGAACTGA ACGAAAAAGAAATCA AAGACCTGTACGACA ACCAGTCCAAATCTG 718  
Fig.3 SI#5 GCTACATCTGGATCA AATACTTCAATCTGT TCGACAAAGAACTGA ACGAAAAAGAAATCA AAGACCTGTACGACA ACCAGTCCAAATCTG 712  
Fig.2 SI#3 GCTACATCTGGATCA AATACTTCAATCTGT TCGACAAAGAACTGA ACGAAAAAGAAATCA AAGACCTGTACGACA ACCAGTCCAAATCTG 709

Paragraph 3.9

721 735 736 750 751 765 766 780 781 795 796 810 804  
As filed GTATCCTGAAGACT TCTGGGTGACTACC TGCAGTACGACAAAC CGTACTACATGCTGA ATCTGTACGATCCGA ACAATACGTTGACG  
Amended GTATCCTGAAGACT TCTGGGTGACTACC TGCAGTACGACAAAC CGTACTACATGCTGA ATCTGTACGATCCGA ACAATACGTTGACG 807  
Fig.1 SI#1 GTATCCTGAAGACT TCTGGGTGACTACC TGCAGTACGACAAAC CGTACTACATGCTGA ATCTGTACGATCCGA ACAATACGTTGACG 808  
Fig.3 SI#5 GTATCCTGAAGACT TCTGGGTGACTACC TGCAGTACGACAAAC CGTACTACATGCTGA ATCTGTACGATCCGA ACAATACGTTGACG 802  
Fig.2 SI#3 GTATCCTGAAGACT TCTGGGTGACTACC TGCAGTACGACAAAC CGTACTACATGCTGA ATCTGTACGATCCGA ACAATACGTTGACG 799

Paragraph 3.10

811 825 826 840 841 855 856 870 871 885 886 900 894  
As filed TCAACAATGTAGGTA TCCGCGGTACATGT ACCTGAAAGGTCCGC GTGGTCTGTTATGA CTACCAACATCTACC TGAACCTCTCCCTGT  
Amended TCAACAATGTAGGTA TCCGCGGTACATGT ACCTGAAAGGTCCGC GTGGTCTGTTATGA CTACCAACATCTACC TGAACCTCTCCCTGT 897  
Fig.1 SI#1 TCAACAATGTAGGTA TCCGCGGTACATGT ACCTGAAAGGTCCGC GTGGTCTGTTATGA CTACCAACATCTACC TGAACCTCTCCCTGT 898  
Fig.3 SI#5 TCAACAATGTAGGTA TCCGCGGTACATGT ACCTGAAAGGTCCGC GTGGTCTGTTATGA CTACCAACATCTACC TGAACCTCTCCCTGT 892  
Fig.2 SI#3 TCAACAATGTAGGTA TCCGCGGTACATGT ACCTGAAAGGTCCGC GTGGTCTGTTATGA CTACCAACATCTACC TGAACCTCTCCCTGT 889

Paragraph 3.11

901 915 916 930 931 945 946 960 961 975 976 990 981  
As filed ACCGTGGTACCAAAT TCATCATCAAGAAAT ACGCGTCTGTTAACA AGGACAATATD-C GCAACAATGATCGTG TATACATCAATGTTG  
Amended ACCGTGGTACCAAAT TCATCATCAAGAAAT ACGCGTCTGTTAACA AGGACAATATCGTTC GCAACAATGATCGTG TATACATCAATGTTG 987  
Fig.1 SI#1 ACCGTGGTACCAAAT TCATCATCAAGAAAT ACGCGTCTGTTAACA AGGACAATATCGTTC GCAACAATGATCGTG TATACATCAATGTTG 988  
Fig.3 SI#5 ACCGTGGTACCAAAT TCATCATCAAGAAAT ACGCGTCTGTTAACA AGGACAATATCGTTC GCAACAATGATCGTG TATACATCAATGTTG 982  
Fig.2 SI#3 ACCGTGGTACCAAAT TCATCATCAAGAAAT ACGCGTCTGTTAACA AGGACAATATCGTTC GCAACAATGATCGTG TATACATCAATGTTG 979

Paragraph 3.12

991 1005 1006 1020 1021 1035 1036 1050 1051 1065 1066 1080  
As filed TAGTTAAGAACAAAG AATACCGTCTGGCTA CCAATGCTTCTCAGG CTGGTGTAGAAAAGA TCTTGTCTGCTCTGG AAATCCGGACGTTG 1071  
Amended TAGTTAAGAACAAAG AATACCGTCTGGCTA CCAATGCTTCTCAGG CTGGTGTAGAAAAGA TCTTGTCTGCTCTGG AAATCCGGACGTTG 1077  
Fig.1 SI#1 TAGTTAAGAACAAAG AATACCGTCTGGCTA CCAATGCTTCTCAGG CTGGTGTAGAAAAGA TCTTGTCTGCTCTGG AAATCCGGACGTTG 1078  
Fig.3 SI#5 TAGTTAAGAACAAAG AATACCGTCTGGCTA CCAATGCTTCTCAGG CTGGTGTAGAAAAGA TCTTGTCTGCTCTGG AAATCCGGACGTTG 1072  
Fig.2 SI#3 TAGTTAAGAACAAAG AATACCGTCTGGCTA CCAATGCTTCTCAGG CTGGTGTAGAAAAGA TCTTGTCTGCTCTGG AAATCCGGACGTTG 1069

Paragraph 3.13

1081 1095 1096 1110 1111 1125 1126 1140 1141 1155 1156 1170  
As filed GTAATCTGTCTCAGG TAGTTGTAATGAAAT CCAAGAACGCCAGG GTATCACTAACAAAT GCAAAATGAATCTGC AGGACAACAATGGTA 1161  
Amended GTAATCTGTCTCAGG TAGTTGTAATGAAAT CCAAGAACGCCAGG GTATCACTAACAAAT GCAAAATGAATCTGC AGGACAACAATGGTA 1167  
Fig.1 SI#1 GTAATCTGTCTCAGG TAGTTGTAATGAAAT CCAAGAACGCCAGG GTATCACTAACAAAT GCAAAATGAATCTGC AGGACAACAATGGTA 1168  
Fig.3 SI#5 GTAATCTGTCTCAGG TAGTTGTAATGAAAT CCAAGAACGCCAGG GTATCACTAACAAAT GCAAAATGAATCTGC AGGACAACAATGGTA 1162  
Fig.2 SI#3 GTAATCTGTCTCAGG TAGTTGTAATGAAAT CCAAGAACGCCAGG GTATCACTAACAAAT GCAAAATGAATCTGC AGGACAACAATGGTA 1159

Paragraph 3.14

1171 1185 1186 1200 1201 1215 1216 1230 1231 1245 1246 1260  
As filed ACGATATCGGTTTCA TCGGTTTCCACCAGT TCAACAATATCGCTA AACTGGTTGCTTCCA ACTGGTACAAATCGTC AGATCGAACGTTCCCT 1251  
Amended ACGATATCGGTTTCA TCGGTTTCCACCAGT TCAACAATATCGCTA AACTGGTTGCTTCCA ACTGGTACAAATCGTC AGATCGAACGTTCCCT 1257  
Fig.1 SI#1 ACGATATCGGTTTCA TCGGTTTCCACCAGT TCAACAATATCGCTA AACTGGTTGCTTCCA ACTGGTACAAATCGTC AGATCGAACGTTCCCT 1258  
Fig.3 SI#5 ACGATATCGGTTTCA TCGGTTTCCACCAGT TCAACAATATCGCTA AACTGGTTGCTTCCA ACTGGTACAAATCGTC AGATCGAACGTTCCCT 1252  
Fig.2 SI#3 ACGATATCGGTTTCA TCGGTTTCCACCAGT TCAACAATATCGCTA AACTGGTTGCTTCCA ACTGGTACAAATCGTC AGATCGAACGTTCCCT 1249

Paragraph 3.15

1261 1275 1276 1290 1291 1305 1306 1320 1321 1335 1336 1350  
As filed CTGCGACTCTGGGTT GCTCTTGGGAGTTCA TCCCGGTTGATGACG GTTGGGGTGAACGTC CGCTGTAAACCGGGA AAGCTT 1332  
Amended CTGCGACTCTGGGTT GCTCTTGGGAGTTCA TCCCGGTTGATGACG GTTGGGGTGAACGTC CGCTGTAAACCGGGA AAGCTT 1338  
Fig.1 SI#1 CTGCGACTCTGGGTT GCTCTTGGGAGTTCA TCCCGGTTGATGACG GTTGGGGTGAACGTC CGCTGTAAAGAAATTC- 1332  
Fig.3 SI#5 CTGCGACTCTGGGTT GCTCTTGGGAGTTCA TCCCGGTTGATGACG GTTGGGGTGAACGTC CGCTGTAAAGAAATTC- 1326  
Fig.2 SI#3 CTGCGACTCTGGGTT GCTCTTGGGAGTTCA TCCCGGTTGATGACG GTTGGGGTGAACGTC CGCTGTAAAGAAATTC- 1323

# Alignment 4

SEQ ID NO:40 (appearing on page 38 in the specification as filed) has been amended as follows:

- At position 121 of paragraph 4.2, T→I.
- At position 327 of paragraph 4.4, Q→W.
- At position 334 of paragraph 4.4, K→Y.

## Paragraph 4.1

1	15	16	30	31	45	46	60	61	75	76	90
As filed	-FNKYNSEILNNIIL	NLRYKDNLLIDL	SGY	GAKVEYDGV	ELNDK	NQFKLTSSANSKIRV	TQNQNIIFNSVFLDF	SVSFWIRIPKYKNDG			89
Amended	-FNKYNSEILNNIIL	NLRYKDNLLIDL	SGY	GAKVEYDGV	ELNDK	NQFKLTSSANSKIRV	TQNQNIIFNSVFLDF	SVSFWIRIPKYKNDG			89
Fig 4 SI#8	MANKYNSEILNNIIL	NLRYKDNLLIDL	SGY	GAKVEYDGV	ELNDK	NQFKLTSSANSKIRV	TQNQNIIFNSVFLDF	SVSFWIRIPKYKNDG			90
Ac# M81186	MFNKNSEILNNIIL	NLRYKDNLLIDL	SGY	GAKVEYDGV	ELNDK	NQFKLTSSANSKIRV	TQNQNIIFNSVFLDF	SVSFWIRIPKYKNDG			90

## Paragraph 4.2

91	105	106	120	121	135	136	150	151	165	166	180
As filed	IQNYIHNEYTIINCM	KNSGWKISIRGNRI	IWTLIDINGKTKSVF	FEYNIREDIS	EYINR	WFFVTITNNLNNAKI	YINGKLESNTDIKDI				179
Amended	IQNYIHNEYTIINCM	KNSGWKISIRGNRI	IWTLIDINGKTKSVF	FEYNIREDIS	EYINR	WFFVTITNNLNNAKI	YINGKLESNTDIKDI				179
Fig 4 SI#8	IQNYIHNEYTIINCM	KNSGWKISIRGNRI	IWTLIDINGKTKSVF	FEYNIREDIS	EYINR	WFFVTITNNLNNAKI	YINGKLESNTDIKDI				180
Ac# M81186	IQNYIHNEYTIINCM	KNSGWKISIRGNRI	IWTLIDINGKTKSVF	FEYNIREDIS	EYINR	WFFVTITNNLNNAKI	YINGKLESNTDIKDI				180

## Paragraph 4.3

181	195	196	210	211	225	226	240	241	255	256	270
As filed	REVIANGEIIFPKLDG	DIDRTQFIWMKYFSI	FNTELSQSNIEERYK	IQSYSEY	LKDFWGNP	LMYNKEYYMFNAGNK	NSYIKLKKDSPVGEI				269
Amended	REVIANGEIIFPKLDG	DIDRTQFIWMKYFSI	FNTELSQSNIEERYK	IQSYSEY	LKDFWGNP	LMYNKEYYMFNAGNK	NSYIKLKKDSPVGEI				269
Fig 4 SI#8	REVIANGEIIFPKLDG	DIDRTQFIWMKYFSI	FNTELSQSNIEERYK	IQSYSEY	LKDFWGNP	LMYNKEYYMFNAGNK	NSYIKLKKDSPVGEI				270
Ac# M81186	REVIANGEIIFPKLDG	DIDRTQFIWMKYFSI	FNTELSQSNIEERYK	IQSYSEY	LKDFWGNP	LMYNKEYYMFNAGNK	NSYIKLKKDSPVGEI				270

Paragraph 4.4

271 285 286 300 301 315 316 330 331 345 346 360  
As filed LTRSKYNQNSKYINY RDLYIGEKFIIIRKS NSQSINDDIVRKEDY IYLDFFNLNQEW RVY TYKFFKKEEKLFLA PISDSDEFYNTIQIK 359  
Amended LTRSKYNQNSKYINY RDLYIGEKFIIIRKS NSQSINDDIVRKEDY IYLDFFNLNQEW RVY TYKFFKKEEKLFLA PISDSDEFYNTIQIK 359  
Fig 4 SI#8 LTRSKYNQNSKYINY RDLYIGEKFIIIRKS NSQSINDDIVRKEDY IYLDFFNLNQEW RVY TYKYFKKEEKLFLA PISDSDELYNTIQIK 360  
Ac# M81186 LTRSKYNQNSKYINY RDLYIGEKFIIIRKS NSQSINDDIVRKEDY IYLDFFNLNQEW RVY TYKYFKKEEKLFLA PISDSDEFYNTIQIK 360

Paragraph 4.5

361 375 376 390 391 405 406 420 421 435 436 450  
As filed EYDEQPTYSCQLLFFK KDEESTDEIGLIGIH RFYESGIVFEEYKDY FCISKWYLKEVKKRP YNLKLGCNWQFIPKD EGWTE 439  
Amended EYDEQPTYSCQLLFFK KDEESTDEIGLIGIH RFYESGIVFEEYKDY FCISKWYLKEVKKRP YNLKLGCNWQFIPKD EGWTE 439  
Fig 4 SI#8 EYDEQPTYSCQLLFFK KDEESTDEIGLIGIH RFYESGIVFEEYKDY FCISKWYLKEVKKRP YNLKLGCNWQFIPKD EGWTE 440  
Ac# M81186 EYDEQPTYSCQLLFFK KDEESTDEIGLIGIH RFYESGIVFEEYKDY FCISKWYLKEVKKRP YNLKLGCNWQFIPKD EGWTE 440

Alignment 5

SEQ ID NO:39 (appearing on page 39 in the specification as filed) has been amended as follows:

- At positions 15-17 of paragraph 5.1, TTT is deleted;
- At position 820 of paragraph 5.10, A is inserted;
- At position 933 of paragraph 5.11, T is inserted;
- At position 988 of paragraph 5.11, G is inserted; and
- At position 1226 of paragraph 5.14, A is inserted.



SEQ ID NO:7 (appearing in Figure 4 of the specification as filed) has been amended as follows:

- At position 255 of paragraph 5.3, T→C.

Paragraph 5.1

Fig 4 as filed 1 15 16 30 31 45 46 60 61 75 76 90 87  
 Fig4 corrected GAATTCACGATGGC- --CAACAAATACAAT TCCGAAATCCTGAAC AATATCATCCTGAAC CTGCGTTACAAAGAC AACAACTCTGATCGAT 87  
 P.39 corrected GAATTCACGATGGC- --CAACAAATACAAT TCCGAAATCCTGAAC AATATCATCCTGAAC CTGCGTTACAAAGAC AACAACTCTGATCGAT 87  
 P.39 as filed -----ATGGC- CAACAAATACAAT TCCGAAATCCTGAAC AATATCATCCTGAAC CTGCGTTACAAAGAC AACAACTCTGATCGAT 78  
 P.39 as filed -----ATGGC- TCAACAAATACAAT TCCGAAATCCTGAAC AATATCATCCTGAAC CTGCGTTACAAAGAC AACAACTCTGATCGAT 81

Paragraph 5.2

Fig 4 as filed 91 105 106 120 121 135 136 150 151 165 166 180 177  
 Fig4 corrected CTGCTCTGGTTACGGT GCTAAAGTTGAAGTA TACGACGGTGTGGAA CTGAATGACAAAGAC CAGTTCAAACTGACC TCTTCCGCTAACTCT 177  
 P.39 corrected CTGCTCTGGTTACGGT GCTAAAGTTGAAGTA TACGACGGTGTGGAA CTGAATGACAAAGAC CAGTTCAAACTGACC TCTTCCGCTAACTCT 177  
 P.39 as filed CTGCTCTGGTTACGGT GCTAAAGTTGAAGTA TACGACGGTGTGGAA CTGAATGACAAAGAC CAGTTCAAACTGACC TCTTCCGCTAACTCT 168  
 P.39 as filed CTGCTCTGGTTACGGT GCTAAAGTTGAAGTA TACGACGGTGTGGAA CTGAATGACAAAGAC CAGTTCAAACTGACC TCTTCCGCTAACTCT 171

Paragraph 5.3

Fig 4 as filed 181 195 196 210 211 225 226 240 241 255 256 270 267  
 Fig4 corrected AAGATCCGTGTTACT CAGAATCAGAACATC ATCTTCAACTCCGTA TTCCTGGACTTCTCT GTTTCCTTCTGGATC CGTATCCCGAAATAC 267  
 Fig4 corrected AAGATCCGTGTTACT CAGAATCAGAACATC ATCTTCAACTCCGTA TTCCTGGACTTCTCT GTTTCCTTCTGGATC CGTATCCCGAAATAC 267  
 P.39 corrected AAGATCCGTGTTACT CAGAATCAGAACATC ATCTTCAACTCCGTA TTCCTGGACTTCTCT GTTTCCTTCTGGATC CGTATCCCGAAATAC 258  
 P.39 as filed AAGATCCGTGTTACT CAGAATCAGAACATC ATCTTCAACTCCGTA TTCCTGGACTTCTCT GTTTCCTTCTGGATC CGTATCCCGAAATAC 261

Paragraph 5.4

Fig 4 as filed 271 285 286 300 301 315 316 330 331 345 346 360 357  
 Fig4 corrected AAGAACGACGGTATC CAGAAATTACATCCAC AATGAATACACCATC ATCAACTGCATGAAG AATAACTCTGGTTGG AAGATCTCCATCCGC 357  
 Fig4 corrected AAGAACGACGGTATC CAGAAATTACATCCAC AATGAATACACCATC ATCAACTGCATGAAG AATAACTCTGGTTGG AAGATCTCCATCCGC 357  
 P.39 corrected AAGAACGACGGTATC CAGAAATTACATCCAC AATGAATACACCATC ATCAACTGCATGAAG AATAACTCTGGTTGG AAGATCTCCATCCGC 348  
 P.39 as filed AAGAACGACGGTATC CAGAAATTACATCCAC AATGAATACACCATC ATCAACTGCATGAAG AATAACTCTGGTTGG AAGATCTCCATCCGC 351

Paragraph 5.5

361 375 376 390 391 405 406 420 421 435 436 450 447  
Fig 4 as filed GGTAACCGTATCATC TGGACTCTGATCGAT ATCAACGGTAAGACC AAATCTGTATTCTTC GAATACAACATCCGT GAAGACATCTCTGAA 447  
Fig4 corrected GGTAACCGTATCATC TGGACTCTGATCGAT ATCAACGGTAAGACC AAATCTGTATTCTTC GAATACAACATCCGT GAAGACATCTCTGAA 447  
P.39 corrected GGTAACCGTATCATC TGGACTCTGATCGAT ATCAACGGTAAGACC AAATCTGTATTCTTC GAATACAACATCCGT GAAGACATCTCTGAA 438  
P.39 as filed GGTAACCGTATCATC TGGACTCTGATCGAT ATCAACGGTAAGACC AAATCTGTATTCTTC GAATACAACATCCGT GAAGACATCTCTGAA 441

Paragraph 5.6

451 465 466 480 481 495 496 510 511 525 526 540 537  
Fig 4 as filed TACATCAATCGCTGG TTCTTCGTTACCATC ACCAATAACCTGAAC AATGCTAAATCTTAC ATCAACGGTAAACTG GAATCTAATACCGAC 537  
Fig4 corrected TACATCAATCGCTGG TTCTTCGTTACCATC ACCAATAACCTGAAC AATGCTAAATCTTAC ATCAACGGTAAACTG GAATCTAATACCGAC 537  
P.39 corrected TACATCAATCGCTGG TTCTTCGTTACCATC ACCAATAACCTGAAC AATGCTAAATCTTAC ATCAACGGTAAACTG GAATCTAATACCGAC 528  
P.39 as filed TACATCAATCGCTGG TTCTTCGTTACCATC ACCAATAACCTGAAC AATGCTAAATCTTAC ATCAACGGTAAACTG GAATCTAATACCGAC 531

Paragraph 5.7

541 555 556 570 571 585 586 600 601 615 616 630 627  
Fig 4 as filed ATCAAAGACATCCGT GAAGTTATCGCTAAC GGTGAATCATCTTC AAACGTGGACGGTGAC ATCGATCGTACCCAG TTCATCTGGATGAAA 627  
Fig4 corrected ATCAAAGACATCCGT GAAGTTATCGCTAAC GGTGAATCATCTTC AAACGTGGACGGTGAC ATCGATCGTACCCAG TTCATCTGGATGAAA 627  
P.39 corrected ATCAAAGACATCCGT GAAGTTATCGCTAAC GGTGAATCATCTTC AAACGTGGACGGTGAC ATCGATCGTACCCAG TTCATCTGGATGAAA 618  
P.39 as filed ATCAAAGACATCCGT GAAGTTATCGCTAAC GGTGAATCATCTTC AAACGTGGACGGTGAC ATCGATCGTACCCAG TTCATCTGGATGAAA 621

Paragraph 5.8

631 645 646 660 661 675 676 690 691 705 706 720 717  
Fig 4 as filed TACTTCTCCATCTTC AACACCGAAGTGTCT CAGTCCAATATCGAA GAACGGTACAAGATC CAGTCTTACTCCGAA TACCTGAAAGACTTC 717  
Fig4 corrected TACTTCTCCATCTTC AACACCGAAGTGTCT CAGTCCAATATCGAA GAACGGTACAAGATC CAGTCTTACTCCGAA TACCTGAAAGACTTC 717  
P.39 corrected TACTTCTCCATCTTC AACACCGAAGTGTCT CAGTCCAATATCGAA GAACGGTACAAGATC CAGTCTTACTCCGAA TACCTGAAAGACTTC 708  
P.39 as filed TACTTCTCCATCTTC AACACCGAAGTGTCT CAGTCCAATATCGAA GAACGGTACAAGATC CAGTCTTACTCCGAA TACCTGAAAGACTTC 711

Paragraph 5.9

721 735 736 750 751 765 766 780 781 795 796 810 807  
Fig 4 as filed TGGGGTAATCCGCTG ATGTACAACAAGAA TACTATATGTTCAAT GCTGGTAACAAGAAC TCITTACATCAAACTG AAGAAAGACTCTCCG 807  
Fig4 corrected TGGGGTAATCCGCTG ATGTACAACAAGAA TACTATATGTTCAAT GCTGGTAACAAGAAC TCITTACATCAAACTG AAGAAAGACTCTCCG 807  
P.39 corrected TGGGGTAATCCGCTG ATGTACAACAAGAA TACTATATGTTCAAT GCTGGTAACAAGAAC TCITTACATCAAACTG AAGAAAGACTCTCCG 798  
P.39 as filed TGGGGTAATCCGCTG ATGTACAACAAGAA TACTATATGTTCAAT GCTGGTAACAAGAAC TCITTACATCAAACTG AAGAAAGACTCTCCG 801

Paragraph 5.10

811 825 826 825 826 840 841 855 856 870 871 885 886 900  
Fig 4 as filed GTTGGTGAATCCTG ACTCGTTCCAAATAC AACCGAAACTCTAAA TACATCAACTACCGC GACCTGTACATCGGT GAAAAGTTTCATCATC 897  
Fig4 corrected GTTGGTGAATCCTG ACTCGTTCCAAATAC AACCGAAACTCTAAA TACATCAACTACCGC GACCTGTACATCGGT GAAAAGTTTCATCATC 897  
P.39 corrected GTTGGTGAATCCTG ACTCGTTCCAAATAC AACCGAAACTCTAAA TACATCAACTACCGC GACCTGTACATCGGT GAAAAGTTTCATCATC 888  
P.39 as filed GTTGGTGAATCCTG ACTCGTTCCAAATAC AACCGAAACTCTAAA TACATCAACTACCGC GACCTGTACATCGGT GAAAAGTTTCATCATC 890

Paragraph 5.11

901 915 916 930 931 945 946 960 961 975 976 990  
Fig 4 as filed CGTCGCAAAATCTAAC TCTCAGTCCATCAAT GATGACATCGTACGT AAAGAAGACTACATC TACCTGGACTTCTTC AACCTGAATCAGGAA 987  
Fig4 corrected CGTCGCAAAATCTAAC TCTCAGTCCATCAAT GATGACATCGTACGT AAAGAAGACTACATC TACCTGGACTTCTTC AACCTGAATCAGGAA 987  
P.39 corrected CGTCGCAAAATCTAAC TCTCAGTCCATCAAT GATGACATCGTACGT AAAGAAGACTACATC TACCTGGACTTCTTC AACCTGAATCAGGAA 978  
P.39 as filed CGTCGCAAAATCTAAC TCTCAGTCCATCAAT GATGACATCGTACGT AAAGAAGACTACATC TACCTGGACTTCTTC AACCTGAATCAGGAA 978

Paragraph 5.12

991 1005 1006 1020 1021 1035 1036 1050 1051 1065 1066 1080  
Fig 4 as filed TGGCGTGATACACC TACAAGTACTTCAAG AAAGAAGAAAGAAAG CTTTTCCTGGTCCG ATCTCTGATTCCGAC GAACTCTACAACACC 1077  
Fig4 corrected TGGCGTGATACACC TACAAGTACTTCAAG AAAGAAGAAAGAAAG CTTTTCCTGGTCCG ATCTCTGATTCCGAC GAACTCTACAACACC 1077  
P.39 corrected TGGCGTGATACACC TACAAGTACTTCAAG AAAGAAGAAAGAAAG CTTTTCCTGGTCCG ATCTCTGATTCCGAC GAACTCTACAACACC 1068  
P.39 as filed TGGCGTGATACACC TACAAGTACTTCAAG AAAGAAGAAAGAAAG CTTTTCCTGGTCCG ATCTCTGATTCCGAC GAACTCTACAACACC 1068

Paragraph 5.13

1081 1095 1096 1110 1111 1125 1126 1140 1141 1155 1156 1170  
Fig 4 as filed ATCCAGATCAAAGAA TACGACGAACAGCCG ACCTACTCTTGCCAG CTGCTGTTCAAGAAA GATGAAGAATCTACT GACGAAATCGGTCTG 1167  
Fig4 corrected ATCCAGATCAAAGAA TACGACGAACAGCCG ACCTACTCTTGCCAG CTGCTGTTCAAGAAA GATGAAGAATCTACT GACGAAATCGGTCTG 1167  
P.39 corrected ATCCAGATCAAAGAA TACGACGAACAGCCG ACCTACTCTTGCCAG CTGCTGTTCAAGAAA GATGAAGAATCTACT GACGAAATCGGTCTG 1158  
P.39 as filed ATCCAGATCAAAGAA TACGACGAACAGCCG ACCTACTCTTGCCAG CTGCTGTTCAAGAAA GATGAAGAATCTACT GACGAAATCGGTCTG 1158

Paragraph 5.14

1171 1185 1186 1200 1201 1215 1216 1230 1231 1245 1246 1260  
Fig 4 as filed ATCGGTATCCACCGT TTCTACGAATCTGGT ATCGTATTCGAAGAA TACAAAGACTACTTC TGCATCTCCAAATGG TACCTGAAGGAAGTT 1257  
Fig4 corrected ATCGGTATCCACCGT TTCTACGAATCTGGT ATCGTATTCGAAGAA TACAAAGACTACTTC TGCATCTCCAAATGG TACCTGAAGGAAGTT 1257  
P.39 corrected ATCGGTATCCACCGT TTCTACGAATCTGGT ATCGTATTCGAAGAA TACAAAGACTACTTC TGCATCTCCAAATGG TACCTGAAGGAAGTT 1248  
P.39 as filed ATCGGTATCCACCGT TTCTACGAATCTGGT ATCGTATTCGAAGAA TACAAAGACTACTTC TGCATCTCCAAATGG TACCTGAAGGAAGTT 1247

Paragraph 5.15

1261 1275 1276 1290 1291 1305 1306 1320 1321 1335 1336 1350 1341  
Fig 4 as filed AAACGCAAAACCGTAC AACCTGAAACTGGGT TGCAATTGGCAGTTC ATCCCGAAAGACGAA GGTTGGACCGAATAG TAAGAATTC----- 1341  
Fig4 corrected AAACGCAAAACCGTAC AACCTGAAACTGGGT TGCAATTGGCAGTTC ATCCCGAAAGACGAA GGTTGGACCGAATAG TAAGAATTC----- 1341  
P.39 corrected AAACGCAAAACCGTAC AACCTGAAACTGGGT TGCAATTGGCAGTTC ATCCCGAAAGACGAA GGTTGGACCGAATAG TAACCTCTAGAGTCG 1338  
P.39 as filed AAACGCAAAACCGTAC AACCTGAAACTGGGT TGCAATTGGCAGTTC ATCCCGAAAGACGAA GGTTGGACCGAATAG TAACCTCTAGAGTCG 1337

Paragraph 5.16

1351 1365 1366 1380 1381 1395 1396 1410 1411 1425 1426 1440  
Fig 4 as filed ----- 1341  
Fig4 corrected ----- 1341  
P.39 corrected AGGCCTGCAG 1348  
P.39 as filed AGGCCTGCAG 1347